

Do Now:

a) Express in simplest form:

$$\frac{x-5}{5-x} = \boxed{-1}$$

b) Explain how you can rewrite $\frac{7x}{5-x}$

$$\frac{-7x}{x-5}$$

⊗ Switch
order of
a subtraction
then switch
sign on
top.

In each case, solve for all values of the variable.

$$1) \frac{3}{3} \frac{1}{x} - \frac{1}{3} \frac{x}{x} = -\frac{1}{3x} \quad \text{LCD} = 3x$$

$$\frac{3}{3x} - \frac{x}{3x} = -\frac{1}{3x}$$

$$\begin{array}{r} 3 - x = -1 \\ -3 \quad -3 \\ \hline -x = -4 \\ \textcircled{x = 4} \end{array}$$

$$\frac{\cancel{(x-4)}^2 \cdot 2}{\cancel{(x-4)}(x+3)} - \frac{\cancel{(x+3)}^{-3} \cdot 2(x-1)}{4-x \cdot \cancel{(x+3)} \cdot x^2 - x - 12} = \frac{2(x-1)}{(x-4)(x+3)}$$

LCD:
 $(x-4)(x+3)$

$$\frac{2x-8}{(x-4)(x+3)} - \frac{-3x-9}{(x-4)(x+3)} = \frac{2(x-1)}{(x-4)(x+3)}$$

$$2x-8+3x+9 = 2x-2$$

$$\begin{array}{r} 5x+1 = 2x-2 \\ -1 \quad -1 \\ \hline \end{array}$$

$$\begin{array}{r} 5x = 2x-3 \\ -2x \quad -2x \\ \hline \end{array}$$

$$\begin{array}{r} 3x = -3 \\ \frac{3}{3} \quad \frac{3}{3} \end{array}$$

$$x = -1$$

$$\frac{\cancel{x}^3}{\cancel{x}^3 x + 2} = \frac{3(\cancel{x+2})^4}{x(\cancel{x+2})^2 + 2x}$$

LCD
 $x(x+2)$

$$\frac{\cancel{x}^2}{x(x+2)} = \frac{3x+6}{x(x+2)} + \frac{4}{x(x+2)} \Rightarrow \begin{aligned} x^2 &= 3x+6+4 \\ x^2 &= 3x+10 \\ -10-3x-3x-10 & \\ \hline x^2-3x-10 &= 0 \\ (x-5)(x+2) &= 0 \\ \hline x=5 & \quad x=-2 \\ & \quad \text{reject} \end{aligned}$$